

NEUTRON-INDUCED FISSION CROSS SECTIONS OF ^{240}Pu , ^{243}Am AND ^{nat}W IN THE ENERGY RANGE 1 - 200 MeV

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The neutron-induced fission cross section of ^{240}Pu , ^{243}Am and ^{nat}W have been measured in the wide energy range of incident neutrons from 1 MeV to 200 MeV as the next stage of fission cross section investigation program performed at the GNEIS facility [1] in frame of ISTC Project # 1971. During the previous stage of this research program the measurement of fission cross-sections of ^{233}U , ^{238}U , ^{232}Th , ^{237}Np , ^{239}Pu , ^{nat}Pb and ^{209}Bi have been performed under support of ISTC grant # 609-97 [2]. The measurements are performing simultaneously for each investigated isotopic targets using multiplate ionization chamber and time-of-flight technique on a 48-m flight path. The 1-GeV proton synchrocyclotron of PNPI was used as a “white spectrum” neutron source with average intensity $3 \cdot 10^{14}$ n/s, burst duration 10 ns and repetition rate up to 50 Hz. TOF and pulse-height spectra were measured and accumulated for each target using the data acquisition system based on a 100-MHz FLASH-ADC. Statistical accuracy of measured cross section of actinide nuclei ^{240}Pu and ^{243}Am is about 2 % at neutron energies above fission threshold and that of sub-actinide nucleus ^{nat}W is about 10 %. The experimental data obtained are presented in comparison with the data of other authors and theoretical calculations based on a Hauser-Feshbach statistical model. The first result of this measurement has been presented earlier [3,4].

References

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